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## Interactions of Rules and Routines: Re-thinking rules

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## **INTERACTIONS OF RULES AND ROUTINES: RE-THINKING RULES**

## **Abstract**

### *Purpose*

This paper addresses the extant and arguably excessive focus on routines in management accounting research, and a relative neglect of rules. It seeks to advance our understanding of how rules and routines may interact, in the technology-enabled context of management accounting and control of contemporary organisations.

### *Design/methodology/approach*

We draw on, and develop, insights from extant literature and from two case studies to explore how rules and routines may interact.

### *Findings*

We propose a framework on the interactions of rules and routines across multiple dimensions. We adopt a wide notion of rules to include formal rules, rules as internal cognitive structures of human actors, and rules technologically embedded in non-human actors. We argue that rules underlie and may precede routines, distinguish between repeated practices and routines and explore the role of technology in today's management accounting practices.

### *Research limitations/implications*

This research shows how the process of routinization and, ultimately, institutionalization of practices involves multiple dimensions of rules, as well as both human and non-human actors. With this understanding, researchers and practitioners will be better equipped to, respectively, understand nuances of management accounting change and actually achieve change in practice.

### *Originality value*

This paper highlights the importance of rules in the routinization and institutionalization of management accounting practices and proposes a framework which explores the interactions of rules and routines across three realms: material, action and psychological. Including a material realm, related with technologically embedded rules, in the proposed framework contributes to institutional theory by acknowledging today's increasing role of technology in organizational life.

**Keywords:** management accounting change, routines, rules, information systems, institutional theory.

## 1. Introduction

In the stream of institutional theory focusing on organisational level processes, Old-Institutional Economics (OIE), popular frameworks relating institutions, routines, rules and practices tend to suggest treating rules and routines in a holistic way, and tend to emphasize routines over rules – the latter of which tend to be conceptualized as formal rules (Burns and Scapens, 2000, Lukka, 2007 and van der Steen, 2011).

Our two independent case studies on management accounting and organizational change (Oliveira, 2010; Quinn, 2010) drew on differing theoretical components of OIE. Although there were many similarities between our cases, Oliveira (2010) used rules as a medium to explain change, while Quinn (2011, 2010) used routines. We separately unbundled the holistic nature of rules and routines, in a sense not perhaps envisaged by previous management accounting researchers. In fact, had we treated rules and routines as a ‘whole’, we might have missed important nuances not addressed in the literature to date. In addition, differences between our cases suggested explanations for different relative importance of rules and routines in change processes.

This paper is guided by advances in conceptualizations on rules and routines. Certainly the nuances of routines have been well debated in the literature (see for example, Becker, 2008; Pentland, 2011; Pentland *et al.* 2012; Quinn, 2014, 2011; van der Steen, 2011). However, the nature of rules has received less attention, at least in the management accounting literature (but in the broader literature see, for example, the works of Hodgson, 2006, 1997 and Wittgenstein, 1953).

We draw on an alternative, wider conception of rules, not restricted to ‘formal’ rules. Formal rules remain, of course, included in the concept, but we add two other dimensions. The first conceptual addition is considering rules as internal cognitive structures, within the agent, i.e., accepted rules influencing actors’ perceptions and practices (Coad and Herbert, 2009). Additionally, there have been recent reminders of the importance of technology in the practices and routines of contemporary organizations (Pentland, 2011). We therefore also draw on a socio-material perspective to explicitly incorporate non-human entities (in particular, software) alongside human beings (individual and collective), and to analyse the role of this technology on the interactions between rules, routines and practices. This allows us to consider a third, material realm of rules, of rules

as embedded in technological devices such as software. These alternative conceptualizations of rules proved effective in explaining change processes in the Oliveira (2010) study, and this paper draws on them to support the proposed framework on the interactions between rules and routines.

Specifically, we propose an OIE framework which 1) rethinks the nature of rules, 2) unpacks the interactions between rules and routines, and 3) includes the role of technology. We propose that it is necessary to look at and understand rules and routines as separate (but linked) phenomena. We hope the framework insights promote clearer understanding of the complex nature of change in and around management accounting and that practitioners will be better equipped to actually achieve change in practice.

The rest of the paper is structured as follows. Section Two reviews the extant literature on routines and rules, including both limitations and advances, to set the groundwork for our later arguments. Section Three briefly introduces and compares our two respective cases, to highlight why the two authors were separately led to focus on either routines or rules as being more important for each organizational change initiative. Section Four offers and discusses an enhanced framework on the interactions between rules and routines and Section Five draws on our case studies to provide two *ex-post* examples of our framework in action in a management accounting setting. Section Six concludes with some final remarks and suggestions for further research.

## **2. Issues and advances on rules and routines**

This section reviews extant literature on rules and routines. We begin by focusing on rules and routines in the OIE strand of institutional theory (Moll *et al.*, 2006) and then introduce alternative perspectives on these concepts. Finally, we explore the interactions of rules and routines, and the role that non-human, technological actors such as information systems can play.

### **Rules and routines in Old-Institutional Economics**

In management accounting, research at the organizational level drawing on OIE and paying close attention to rules and routines includes the seminal work of Burns and Scapens (2000) (hereafter B&S), Lukka (2007) and van der Steen (2011). Briefly, and drawing particularly on B&S, institutions are typically defined as taken for granted assumptions, routines as “the way things are done” (2000, p. 5) and rules as “the ways

things should be done” (2000, p. 6) according to formal statements. Management accounting is typically seen as a “routine and potentially institutionalized organisational practice” (B&S, 2000, p. 5), generally portraying some consistency over time.

It has been pointed out that a strength of OIE (like other strands of institutional theory – see Moll *et al.*, 2006) lies in explaining how social structures like institutions, routines and rules constrain practices. OIE has extensively explored the ‘reconstitutive downward effect’<sup>1</sup> in which institutions influence “individual habits of thought and action” (Hodgson, 2006, p. 7) – a downward effect also broadly applicable to the ways in which the two other structures, rules and routines, influence practices. However, OIE has arguably been less successful in explaining the emergence of these structures (see Hodgson, 1989), with founders of institutional theory calling for clearer understanding of the micro foundations of macro structures (DiMaggio, 1997; Barley, 2008)<sup>II</sup>. In the literature, some concepts and relationships have been questioned or considered to be not sufficiently clear, such as routines and the relationships between rules and routines. We now explore advances in the literature and integrate ideas which have not been adequately related, to set the ground for our framework in Section Four.

### **Conceptualizations of routines: multiple dimensions**

Scholars from outside the management accounting area have recognized a duality of routines. Winter (1995, pp. 169-170) distinguishes a “routine *per se* - the abstract activity pattern” and a “routine in operation at a particular site”. Similarly, Feldman and Pentland (2003) state that organisational routines have two dimensions, namely the ostensive and performative. The *ostensive* dimension “may have a significant tacit component” which moulds the perception of the routine, “may exist as a taken-for-granted norm” (Feldman and Pentland, 2003, p. 101) and represents “abstract, cognitive regularities and expectations that enable participants to guide, account for and refer to specific performances of a routine” (Pentland and Feldman, 2008, p. 286). The ostensive dimension is thus subjective, since it “incorporates the subjective understandings of diverse participants” (Feldman and Pentland, 2003, p. 101). The *performative* dimension refers to “the specific action(s) taken by people [...] when engaged in an organisational routine” (Feldman and Pentland, 2003, p. 102) “at specific times, in specific places” (Pentland and Feldman, 2008, p. 286). Thus, Feldman and Pentland (2003) distinguish between the abstract concept of a routine *per se* and the associated behaviour (see also Pentland and Feldman, 2008; Hodgson, 2008, 2006).

This dual dimension of routines as *structure* and as *action* is absent from management accounting frameworks like B&S. Englund and Gerdin (2008) refer to conceptual disparity, where some writers view management accounting as modalities (structures) drawn on to reproduce practices, whereas others view management accounting as recurrent practices (actions)<sup>III</sup>. They argue that combining both conceptualizations may be ontologically problematic due to conflating social structure and action, and that

“[...] we need notions both to describe the situated and recurrent management accounting practices as such, and to denote the non-situated modalities that inform those management accounting practices” (Englund and Gerdin, 2008, p. 1130).

We adopt the notion of duality in management accounting routines to avoid conceptual disparity (Burns, 2009; Englund and Gerdin, 2008; Johansson and Siverbo, 2009) and clearly distinguish between the tacit (ostensive) dimension and the action (performative) dimension of routines (Feldman and Pentland, 2003). This distinction is particularly useful when rules are apparently absent (see the RoutineCo case later): in the absence of (formal) rules, the ostensive dimension would operate as orienting actors' practices at a collective level.

Repetition is a core characteristic of routines (Becker, 2004), but we argue that a performative routine is 'more' than a merely repeated practice. The fact that a practice is repeated (e.g., once) is unlikely to be sufficient to allow considering it as a performative routine. Since there are empirical difficulties for researchers to recognize a routine when they encounter one, we suggest some distinctive characteristics, which refer to less visible characteristics. Characteristics like inertia (Becker, 2004; van der Steen, 2009), automaticity and tacitness (Lorenz, 2000) are required to classify a repeated practice as a routine. Inertia refers to rigidity (Gilbert, 2005) and how routines preserve the underlying logic, creating a reinforcing cycle supporting the routine and manifested through limited change in behaviour (van der Steen, 2009). Inertia of routines is thus similar to inertia of physical objects, resisting change to its state of: 1) rest, since a routine does not get constituted immediately; and 2) motion, since a routine tends to remain stable in time - although performative routines can fade away over time if not enacted (Feldman and Pentland, 2003; Pentland and Feldman, 2008). Inertial tendency to remain in motion is strongly influenced by some automaticity in performative routines. Automaticity refers to the ability to undertake tasks in an almost unconscious fashion. Finally, tacitness



implies an unspoken and inferred way of doing things. Together, characteristics such as inertia, automaticity and tacitness have a sedimentary effect (Clegg, 1989; Cooper *et al.*, 1996; Hyndman *et al.*, 2012; Malhotra and Hinings, 2005), whereby repeated practices gradually evolve into a ‘settled’ routine.

In addition to the ostensive and performative dimensions of routines, more recent literature has added another interesting dimension of routines. Volkoff *et al.* (2007) refer to a material dimension of routines, embedded within software and which is “concrete and specific” as opposed to “idealized and abstract” (p. 840). They note that the material dimension is not the same as a performative dimension, as the system/software executes a transaction, rather than performs it. We will return to this dimension later as we explore rules and develop our framework

The above institutional literature typically pays relatively little attention to rules (Englund and Gerdin, 2008; Johansson and Siverbo, 2009; Quinn, 2011; van der Steen 2011, 2009) and, as stated, tends to conceptualize rules as formal. For example, Feldman and Pentland (2003) and Pentland and Feldman (2008) describe (formal) rules as artefacts of routines, implying that routines would tend to exist before (formal) rules. However, we now suggest an alternative conceptualization of rules.

### **Conceptualizations of rules: beyond formal rules**

The narrow conceptualization of rules as formal rules has arguably stifled advance. As Hodgson (2006) notes, there is no consensus on what “formal” means, since it has been differently associated with notions such as “legal, written, explicit, codifiable” (p. 18). In addition, the contextualization and operationalization of formal rules always depends on non-legal rules and inexplicit norms and, importantly, there is no clear distinction between formal and informal. Moreover, the defence for this narrow definition is often largely conventional: an option by the researcher to thus define them, or simply following a definition in the literature. In some cases, the argument is to clearly distinguish rules from routines: (formal) rules have a documented nature, whereas routines do not (Quinn, 2014). However, key institutionalists such as DiMaggio (1997), Barley (2008) and Thornton and Ocasio (2008) use the term ‘rule’ beyond the restricted notion of formal rules (although typically without an explicit definition), seemingly aware that a restricted conceptualization is not necessary, is not useful and is actually counter-intuitive.

We propose a broad notion of rules, in line with a general sense understanding of the term, unrestricted by conventional academic definitions. The notion of “prevailing rules of practice” goes beyond formal/informal dimensions. “Formal” rules remain included, but the emphasis is on rules as “internal structures, within the agent” (Coad and Herbert 2009, p. 179) (see also, Busco, 2009), as accepted, perceived and later enacted by organizational actors. These internal structures are cognitive representations, “connected sets of precepts” (Englund and Gerdin, 2008 p. 1129), and they “embed themselves within people’s minds and cognitive armoury” (as used by Burns, 2009, p. 18 to characterize “habits, routines and other rule-like structures”). Clegg (1989) identifies rules of meaning (ways of making sense of the world) and rules of membership (beliefs of appropriate behaviour given actual or desired membership of certain groups). These two types of rules, analytically separated but which in practice are interrelated, orient agents on how to perceive the world and act, hence creating behavioural dispositions. In a nutshell, the focus and the distinctiveness of this alternative notion of rule is on becoming a rule to a particular agent, within and accepted by him/her.

Hodgson (2006, p. 3) suggests a rule “is broadly understood as a socially transmitted and customary normative injunction or immanently normative disposition, that in circumstances X do Y”. In line with the ‘reconstitutive downward effect’ discussed above, prevailing, accepted rules are subsequently enacted in actors’ and organizational practices. Again, the crucial point is becoming a rule (as an *internal structure*) to *particular actors* - rather than being externally defined or proposed, in whatever form, but without having become accepted. “If laws or declarations are neither customary nor embodied in individual dispositions, then ‘formal’ or not they have insignificant effects. They are mere declarations or proclamations, rather than effective social rules” (Hodgson, 2006, p. 18).

Highlighting rules acceptance and enactment by particular actors requires considering the inherent indexicality of rules (Clegg, 1989). Indexicality refers to how “rules are dependent on the context in which they are drawn upon by agents”. This context dependency is related with two processes of interpretation: regarding the context of interpreters (i.e., the organisational members); and regarding the context of interpretation (i.e., the actual situation in which the rule is interpreted and potentially enacted) (Oliveira, 2010, p. 160). Interpretation is often ambiguous (Boland, 1996), but a first (and then repeated) enactment of a rule in particular circumstances may increase clarity and reduce

uncertainty around it. Although contexts may change, performing these two types of interpretation promotes the emergence of ‘jurisprudence’ for future interpretation (and enactment) of the rule by those actors, thus potentially further strengthening the rule as an orienting, cognitive structure and making it more resilient. At the same time, but in the opposing direction, interpreting and enacting rules in particular circumstances creates an opportunity to clarify and even change those accepted rules. When attempting to enact a rule, actors may be confronted with limitations of how it is defined or how it should be applied – a difficulty that may question the validity of the rule and trigger a process of redefinition and reinterpretation.

The relevance of rules as internal cognitive structures remains even considering the Carnegie School’s (see Hodgson, 1988) insights that behaviour is not entirely deliberative, conscious and intentional, and that individuals adopt satisficing (rather than maximizing) strategies (March and Simon, 1958). These findings emphasize *rule following* and, particularly, *routinized* rule following - even if mere ‘rules of thumb’ are involved (DiMaggio and Powell, 1991; Hodgson, 2008; Scapens, 1994). But routinized rule following still begs the issue of knowing *what the followed rules are* and highlights that *there are still rules involved* – albeit potentially not formal ones. Indeed, Becker (1998) adopts this concept of rule as a cognitive representation to replace the abstract level of routines. Furthermore, DiMaggio (1997) states that while the most important type of cognition is automatic (routine and schematic), deliberative cognition remains relevant in the less frequent (but potentially more crucial and valuable) occasions of critical reflection, where accepted rules are consensually central.<sup>IV</sup>

In brief, an expanded conception of rules encompasses the notion of formal rules but adds and places a distinctive emphasis on rules as an internal, cognitive structure of agents - rules as accepted and which may then be enacted by agents. This wider notion makes a case for rules to regain a centre stage in institutional research, next to routines, and addresses calls from various approaches to consider cognitive insights in sociological accounts. Some calls are indirect, as in Giddens’ (1984) reminders about the potential of reflexive and knowledgeable agency at a micro level (Englund *et al.*, 2011); but others are more direct, as in DiMaggio’s (1997), Barley’s (2008) and Thornton and Ocasio’s

(2008) call to use the “psychology of mental structures” to capture the “micro foundational evidence for the efficacy of agency” (DiMaggio, 1997, p. 271) through rational, mindful behaviour, particularly at relatively low social levels such as organizations.

## **Reflections on rules and routines – and non-human actors**

Having explored extant literature on rules and routines, we now explore their interactions, building on the previous discussion and also including non-human actors such as information systems – key actors underpinning routines in contemporary organizations (Pentland, 2011).

### **Rules underlying routines**

Rules, as conceptualized above, are implicated in all dimensions of routines in recent literature, whether routines are conceived as having ostensive, performative and/or material dimensions. First, the ostensive dimension of routines refers to its guiding properties, which we have located in agents’ internal structures; as Quinn (2010, p. 295) noted, “[i]t could be argued that the ostensive aspect of a routine is similar to an informal (undocumented) rule”. We have also included in this ostensive dimension the dispositions that routines generate within agents towards acting in certain ways; discussing this dispositional dimension, Johansson and Siverbo (2009) highlight that “routines can be expressed as rules” (p. 148). Second, in the performative dimension of routines as programmatic *rule*-based behaviours, the underlying rule being enacted (albeit in a routinized way) should not be ignored. Third, Volkoff *et al.*’s (2007) discussion on the material dimension of routines actually concerns the multiple rules underlying routines being hard-coded in information technology. Although Volkoff *et al.* do not mention rules, their definition of material routines as “embedded in the ES [Enterprise System] in the form of system-executed transactions - sets of explicitly defined steps that require specific data inputs to automatically generate specific outcomes” (p. 839) actually refers to rules defining transactions and their sequence, based on the application of the coded rules to the particular circumstances that occur in everyday organizational life.

It is therefore impossible to expunge rules out of the debate on routines, routinized rule following and routinized action. For example, routinely producing a monthly variance

statement is the enactment of an accepted rule stating that such a report should be produced every month – even if potentially an almost unconscious rule.

### **Rules without, and before, routines**

Not only rules underlie routines, as argued above, but rules may influence behaviour even when there are no routines – a scenario which further increases the importance of rules to understand organizational practices. In a given empirical setting, routines may not exist due to lack of previous occurrence, recurrence or merely insufficient recurrence, failing to reach a routinization threshold. In other words: recurrence is necessary, but not sufficient, for routines to exist<sup>V</sup>; however, this requirement does not apply to rules, which may have been accepted by actors and thus orient practices in that empirical setting, without those actions ever having been performed by those actors.

As we already stated, recurrence, or repetition, is a basic characteristic of routines. “The only commonality amongst [the various definitions of routines] is that they have to do something with repetition or regularity” (Becker, 2004, p. 664; see also Quinn, 2011; Pentland, 2011). Recurrence of behaviours is required both to create a routine and to maintain it (Feldman and Pentland, 2003). Realistically, “one would be hard pressed to call something happening only once a routine” (Becker, 2004, p. 646). Moreover, “without on-going performance”, the performative dimension disappears and even the ostensive dimension, though it may still exist, “becomes meaningless” (Feldman and Pentland, 2003, p. 108) and “may diminish over time, or even disappear” (Quinn, 2010, p. 296).

Furthermore, recurrence does not guarantee the achievement of routine status, neither in the ostensive dimension, nor in the performative dimension. There may be recurrence, but not sufficient recurrence to become a routine - at least, not yet. Clearly, the level of sufficient recurrence is not definable in quantitative terms. Repetition is inherently a time-related concept – but most likely in a non-linear way (Quattrone and Hopper, 2005). For example, a new once-a-year management accounting task might not be regarded as routine for a number of years, whereas a task performed multiple times per month may be considered a routine in a much shorter timeframe. In addition, the extent to which a practice is repeated throughout a company may promote such a practice to routine status more quickly. So, the degree of repetition required for a routine to emerge may involve

dimensions such as the length, quantity, intensity or organizational spread of the repetition - but it is unlikely to be definable in quantitative, general terms.

We acknowledge that Burns (2000) warns about not exaggerating the potential of routinization: “Routines (...) comprise ‘programmable’, rules-based behaviour (...) grounded in repeatedly following such rules. (...) The above is not to say, however, that all accounting becomes routinized (...), but that there is potential for routinization” (Burns, 2000, p. 571; see also Yazdifar *et al.*, 2008). So, the necessary (but insufficient) requirement of recurrence restricts the field of application of the routine concept, and researchers should be cautious about claiming that a given routine does exist in a certain empirical setting.

On the contrary, rules do not require repeated occurrence of behaviours. Actors may draw on specific rules for reasons unrelated with existing routines. A Parsonian perspective (which largely underlies OIE’s mechanism of institutions downward effects) emphasizes morally accepted rules, the individuals’ evaluative judgment based on wider values, norms and attitudes derived from socialization. Alternatively, a more calculative perspective highlights that individuals may enact certain rules according to strategic purposes, rather than genuine internalization and moral acceptance (Boland, 1996; Ribeiro, 2003; Thornton and Ocasio, 2008). None of these perspectives is crucially dependent on previous behaviour.

It is plausible, as B&S suggest, that repeated behaviours may create (ostensive) routines - which may be conceptualized as rules – and then eventually even be codified as (formal) rules (see also Quinn, 2011). We accept that past and, particularly, recurrent behaviour may leave its mark on actors and their rules, as highlighted by the notion of path-dependency (e.g., Becker, 2004; Burns, 2000; Burns and Scapens, 2000; Coad and Cullen, 2006; Coad and Herbert, 2009; Modell *et al.*, 2007; Nelson and Winter, 1982; Powell, 1991; Spraakman, 2006). However, our point, as already stated, is that rules, unlike routines, do not derive *necessarily* from past behaviour; rules may exist (as formal rules and/or as part of an individual’s internal structure) without any underlying prescribed action having ever been performed.

The above arguments open the possibility that rules may precede routines – a sequence different from the usual rationale in the literature, in which extant routines underlie the creation of (formal) rules (e.g., Burns and Scapens, 2000; Quinn, 2011). Rules, as part of

actors' internal cognitive structures, influence perceptions and actions. As noted above, rules enactment in particular circumstances requires considering rules indexicality; and the required processes of interpretation (of the context of the interpreters and of the context of interpretation) and the emergent jurisprudence may further strengthen the rule as a cognitive structure, thus making those rules more resilient. As Modell *et al.* (2007) note, B&S mainly ascribe resilience (e.g., of controls) to routines. We agree, but we are providing a more detailed account of underlying processes, by relating that resilience of routines to the resilience of underlying rules, gained through their (initial and repeated) interpretation and enactment in particular circumstances. Upon recurrent enactment of those rules, these repeated practices may become routinized (and, eventually, institutionalized). In this scenario, rules underlie the emergence of, and therefore precede, routines – an alternative sequence which may be a useful additional explanatory insight for researchers.

### **Rules, routines and non-human actors**

Pentland (2011) reminds us that non-human actors such as information systems may play a significant part in today's organizational practices, including routines. The explicit consideration of non-human actors, ranging from non-human living entities to technological devices, alongside individual and collective human actors, is a landmark of Actor-Network Theory (ANT) (Callon, 1986). Volkoff *et al.* (2007) draw on critical realism (Archer, 1995) to highlight information technology as a particularly relevant artefact in organizational routines, since "it is an integral part of those routines, not just part of the context within which routines are executed" (Volkoff *et al.*, 2007, p. 833). On the contrary, institutional theory has tended to focus on human actors, at an individual and (in particular) at a collective level; non-human entities are not usually considered as actors, but typically seen as contextual factors.

As described by Andon *et al.* (2007, p. 276), "ANT explores processes and relational effects within socio-technical networks of elements", i.e., socio-technical relations. Pentland (2011) recently added to his prolific writings on routines the ANT view of 'socio-materiality' to describe how organizational practices are inevitably bound with materiality. Volkoff *et al.*'s (2007) critical realist view on the material dimension of routines – or the material dimension of rules, as we reframed it above – emphasizes

technology even more than ANT, and clearly separates structure and agency. Indeed, a particular appeal of the material dimension of information systems is their potential to operate as a simultaneously constraining and enabling device, routing organizational actions. We share Volkoff *et al.*'s view that although technology is interpretively flexible (Orlikowski, 2000, 1992), it is not infinitely flexible. Following Volkoff *et al.*, we consider that viewing technology as “interpretively flexible (Orlikowski 1992, p. 405), enacted and defined at the moment of use” (p. 834), may underestimate the rigidities imposed upon users during their everyday activities. We concur with ANT that an information system is actually a socio-material entity, defined within a socio-material actor-network (including, for example, the human actors and the available information technology within and around an organization). However, as everyday organizational life unfolds through the interactions of human and non-human actors, such material device operates in a rather inflexible way, according to the options available and selected at its configuration stage.

Although this is not a new characteristic of today's world, it may be argued that the role of technology in organizations is now more prevalent and pervading than ever. As such, institutional theory explanations (about institutions, routines, rules and practices) may be enriched by explicitly incorporating non-human entities, and technology in particular and information systems above all, as a particular and increasingly important category of actors.

### **Summary of rules and routines**

In this section, we suggested replacing the more common, narrow conception of rules as formal rules, by a wider, yet micro level one, that also includes rules as actors' internal structures. This may bolster the explanatory power of micro foundations leading to the emergence of routines and, ultimately, institutionalized practices at the collective level. The current literature emphasis on routines may leave researchers with an inadequate conceptual toolkit to account for empirical situations in which actors' cognitive structures orient their actions, but in which routines have not (yet) consolidated. Extant institutional frameworks neglect the insight that routines may not emerge *at all* and surely do not emerge immediately after an action is first performed. In addition, we noted the relevance



of technology, and information systems in particular, in today's organisational practices (and rules and routines).

In Section Four, we present a framework which addresses these gaps and helps researchers identify characteristics which distinguish rules, routines and merely repeated practices - and explicitly incorporates technologically embedded rules. First, in Section Three, we briefly recount our empirical cases to highlight similarities, but also differences which guided us in separate directions in the use of the concepts of rules and routines.

### **3. Empirical insights from RuleCo and RoutineCo**

As noted earlier, we both studied management accounting change using case studies involving organisational change and information systems. Our cases are termed RuleCo (Oliveira, 2010) and RoutineCo (Quinn, 2010). We now briefly summarize the change processes of the cases drawing on three key dimensions of change: context, substance and politics (Dawson, 2003). Context refers to the past and present setting within which change occurs. Substance refers to four sub-dimensions, namely: (1) scale and scope of the change; (2) defining characteristics of change; (3) timeframe; and (4) the perceived centrality of change. Politics are activities to gain power within and around the organization. In this paper, we see power as a capacity to achieve objectives and attain interests (Clegg, 1989). Politics may include "government pressures, head-office or parent-company influence, trade union activity, influence of consultants and relationships between management and operations staff" (Dawson, 2003, p. 8).

#### **RuleCo**

RuleCo is a large European manufacturing company which grew mainly through acquisitions, leading to a dispersed organizational structure across three continents. The empirical case work occurred between 2005 and 2008, with the analysis period being 1998-2008.

By the end of the 1990's, a multiplicity of non-standard business processes existed across countries and plants and many local plant managers exercised more power than expected, given their formally defined relations with theoretically 'powerful' central actors – including RuleCo's main shareholder. The integration process of a very large competitor acquired by RuleCo was in its early stages and competitive pressures were strong. Finally, its accounting systems were disparate and not year 2000 compliant. In this context, the

company initiated a large scale change project in 1998. The substance of the change project included the implementation of SAP financial modules and the introduction of a new corporate centre and a shared-services centre, in the same location of the main shareholder. The change project thus involved large-scale change in business processes, organizational structures and information systems.

Clashes of interests, power struggles and resistance characterized a high-pressured change project. The network of the three innovations (the two new organizational structures and the SAP information system) were decisive to re-balance power relations in favour of the main shareholder and other central actors. RuleCo's redefined network allowed conducting redefined financial business processes based on SAP through the shared service centre, reallocating tasks from local actors to central actors and establishing more or less subtle – yet effective – incentives to promote the enactment of centrally-defined rules. Together, these changes strongly contributed to standardized and centrally controlled rules, both in the accounting area and beyond, becoming accepted and enacted across RuleCo.

### **RoutineCo**

RoutineCo, like RuleCo, is a large European manufacturing company that grew over time, mainly through acquisitions in Central and Eastern Europe. These acquisitions resulted in a dispersed and decentralized organisation and multiple, non-standardized business practices. The empirical case work occurred between 2005 and 2008, with the analysis period being 2004-2008.

RoutineCo had implemented SAP in 1998 for core finance processes, but product costing and production planning remained outside SAP. Spreadsheets were used for product costing, and the level of product costing was not detailed. Externally, RoutineCo faced increased economic and competitive pressures. Combined with the dispersed nature of the organisation, these pressures brought about a large scale information systems change project – which included management accounting. The project started in 2004 and the substance of the change included new product costing systems and standardized business processes around product costing.

### **RuleCo vs. RoutineCo**

Although our methodological approach here is not comparative case studies, many similarities between the two cases stand out. Both companies operated in process

industries with several similar traits and were affected by similar global economic factors. Both cases involved organisational and information systems change with an impact (direct or indirect) on management accounting. Both aimed at achieving some degree of common centralized information systems, through which new technology would incorporate new ways of doing things in accounting and other organisational areas. Table 1 summarizes key aspects of the change process in the two organisations. The key difference in how change was to be brought about was the *impetus* and *formality* with which the change was to be made. In particular, and importantly for our argument, the difference was whether rules (and other organisational features) were deliberately used to change practices (in RuleCo), or whether practices changed in an emergent and largely undirected process (in RoutineCo).

Key aspects of change processes	RuleCo	RoutineCo
Time frame	<ul style="list-style-type: none"> <li>• Major events in 1998-2004, and on-going throughout the field work (2005-2008)</li> </ul>	<ul style="list-style-type: none"> <li>• 2004-2008</li> </ul>
Scope of change	<ul style="list-style-type: none"> <li>• Financial area</li> </ul>	<ul style="list-style-type: none"> <li>• Production planning &amp; product costing; also sales function</li> </ul>
Scale of change	<ul style="list-style-type: none"> <li>• Scale: Large scale &amp; radical; <ul style="list-style-type: none"> <li>◦ Large IS change</li> <li>◦ Large changes in business processes</li> </ul> </li> <li>• Large changes in organizational structures</li> </ul>	<ul style="list-style-type: none"> <li>• Scale: Large scale &amp; discreet <ul style="list-style-type: none"> <li>◦ Discreet IS change</li> <li>◦ Some changes in business processes</li> </ul> </li> </ul>
Characteristics of change	<ul style="list-style-type: none"> <li>• New IS (SAP FI &amp; Document management solution)</li> <li>• New organizational structures <ul style="list-style-type: none"> <li>◦ Relocation of Corporate Centre (CC)</li> <li>◦ New Shared Services Centre (SSC)</li> </ul> </li> <li>• New, standardized business processes in financial area</li> </ul>	<ul style="list-style-type: none"> <li>• New production planning &amp; product costing systems</li> <li>• Standardized business processes in sales, planning and product costing</li> </ul>

**Table 1: Key aspects of change processes in RuleCo and RoutineCo.**

At RuleCo, rules were the key focus of the change. The change process at RuleCo included two salient features: first, a vigorous attempt to change accepted rules of human actors at the subsidiary level; second, embedding rules within new information systems. On the other hand, at RoutineCo, even though changes were made, they were more informal, involved no obvious clashes of interest and were more emergent in nature. Although in both cases change was an on-going process (Dawson, 2003), RuleCo depicts a more classical change scenario (Lewin, 1951) in that there is an almost apparent

‘starting point’ when actors deliberately intend to introduce new rules to attain particular objectives and interests.

To elaborate briefly, at RuleCo, key central actors perceived local actors had too much power – an issue which the central actors wished to re-balance to their favour. They created new organisational structures, attempted to change the extant rules that local actors accepted and enacted in their everyday life and, whenever possible, embedded desired rules within new information systems. At RuleCo, there were explicit and purposeful attempts to introduce rules in a reconfigured organisational network, aiming to reshape practices (by both human and non-human actors) in clearly defined ways, so that interests of central actors were attained. Section Five provides three examples on management accounting and control – in particular, about controls on purchasing and credit risk decisions and about product costing requirements. The three examples show how attempts to change practices were targeted at changing prevalent rules and created mechanisms promoting their enactment, through both self-discipline and traditional (but organisationally-embedded) control devices. Ultimately, this change process re-balanced power more towards the centre of the organization.

In contrast, at RoutineCo, although the changes were seen as central to survival and supported by top management, no formal procedures were created, adopted or forced upon any actors - in the management accounting realm at least. In fact, in contrast to RuleCo, changes made to systems and processes only gradually emerged and evolved as the change project was rolled out. They were not initially embedded within software by any actor as the way things should be done. Section Five provides an example of change to cost reporting which highlights the emerging, evolving and less formal nature of change at RoutineCo. Overall, in RoutineCo routines gradually emerged out of practices without being explicitly driven or desired, whereas in RuleCo actors were not willing to wait for routines to emerge and carried out purposeful interventions to influence practices, which included addressing, head-on, prevalent rules of practice.

Reflecting on our objective in this paper, the cases highlight that, in order to understand practices and organizational change, rules may be a more or less important explanatory variable than routines, at least if we view rules in a formal sense. The decisiveness of the change process at RuleCo required changing prevalent rules - changes in actors’ internal cognitive structures and in adopted information systems aiming to directly impact

practices. Routines were not addressed directly, but they were expected to emerge as a consequence of the repetition of rule-based practices. The question now is what this implies for management accounting research drawing on institutional theory, in particular research focusing on routines. As we noted earlier, unpacking rules and routines may help gaining a clearer understanding of their interactions and hence improve our interpretations of management accounting change.

#### **4. A framework on interactions of rules and routines.**

Based primarily on a synthesis of the literature, spurred on and guided by our cases, and developed through further theoretical elaboration, we propose a framework, in the technology-driven functioning of contemporary organisations, which explores the interactions of management accounting rules and routines in more detail than extant institutional literature, to improve our interpretations of management accounting change. We first introduce and describe the framework, then note some clarifications and points of discussion. In Section Five, we apply it to examples from our cases.

##### **The framework**

As stated in the introduction, each author of the present paper independently conducted each case study, RuleCo (Oliveira, 2010) and RoutineCo (Quinn, 2010). However, only subsequent discussions about our cases, interpretations and developments allowed us to gradually identify similarities, differences and complementarities, at both empirical and theoretical levels. Ongoing discussions led us to jointly (re)interpret our cases and further explore the literature, culminating in a framework which allows making sense of our cases and is presented in this section. The framework is later applied in Section Five, not only to reveal the kind of empiric examples and interpretations which underpinned the framework development, but also to illustrate how the model can be applied within the management accounting and control area.

Our brief case analysis clearly shows that rules and routines are separable phenomena. So, to better understand and interpret the nature of change in a real-life management accounting setting, a researcher may wish to concentrate the analysis of change on either rules or routines, depending on the case characteristics. This is not to say that rules and routines *must* be solely determined as separable phenomena. We entirely agree with the view that rules and routines interact to bring about potentially institutionalized, taken-for-

granted management accounting practices. However, and particularly because we agree with this, we re-visited the two concepts (and specifically the relatively neglected concept of rules) and how they interact. Our point is that rules may be more or less important than routines in different cases, that rules may precede the emergence of routines, and that technological factors like information systems may be crucial to understand practices, rules and routines.

Recent contributions on the nature of rules and routines also suggest a re-visit of extant institutional frameworks. Quinn (2014, 2011) contributed to this re-visit by concentrating on routines. Drawing particularly on developments about the nature of rules, we propose in Figure 1 a framework on interactions between rules and routines across multiple dimensions. The framework broadly mirrors that of B&S, but it takes into account earlier discussions, namely: 1) the separable nature of rules and routines; 2) the definition of routines in multiple dimensions; 3) the widened definition of rules, in multiple dimensions; and 4) the role of technology.

**[insert Figure 1 about here]**

**Figure 1 – A framework on the interactions of rules and routines.**

The framework depicts three realms – material, action and psychological – which encompass the ontology of the elements which we argue ultimately lead to institutionalized management accounting practices. The material realm encompasses technologically embedded rules, encoded within technological devices such as ERP systems software and other similar technologies. The action realm encompasses the actual performance of management accounting practices by actors. The psychological realm encompasses cognitive understandings, including how practices are to be performed. Consistent with the above downplay of the distinction between formal and informal rules, the framework does not depict formal rules for simplification purposes<sup>VI</sup>. Considering all three realms helps interpret how management accounting practices may or may not become routinized.

The psychological realm includes internal cognitive structures, i.e., rules which have been accepted by organisational members<sup>VII</sup>. In the material realm, accounting software typically includes encoded rules, as described by Oliveira (2010) and Volkoff *et al.*

(2007). These encoded rules have been selected by organisational members driving the software implementation, according to the rules they accept and consider desirable<sup>VIII</sup>. Together, cognitive and material rules are structures which inform ‘new’ practices, performed within a particular socio-technical network. Most organisational practices are repeatedly performed (supported by technologically embedded rules), and may eventually gain a routinized nature. This routinized nature encompasses performative routines (actions) and ostensive routines (Feldman and Pentland, 2003), with the latter representing a rule reinforced by routinization. Ultimately, if both routine dimensions are sustained in time, they may develop a taken-for-granted status within the organization and become institutionalized.

Our framework also includes the interdependence between the performative and the ostensive dimensions of routines (cf. Feldman and Pentland, 2003). The acting out of the routine (the performative routine) is essential for the ostensive dimension to emerge and be sustained. In time, without action, routines may become meaningless, diminish and even dissipate (although “dormant” routines can be re-enacted; see Birnholtz *et al.*, 2007). In turn, an ostensive routine is a rule providing guidance for action, representing a propensity to act (Burns, 2009; Hodgson, 2008). In fact, it is a rule enacted over and over again, becoming an empirically tried and tested idea of a routine, having gone through the processes of context interpretation involved in rules enactment (which, as we have argued, may reinforce the rule). So, an ostensive routine is a rule that has achieved a routine nature, an empirically strengthened rule, and hence in turn will influence practices even more strongly than before the rule evolved and became embedded in a routine.

The core of the framework depicts a scenario where institutionalized practices are (potentially) formed, in a bottom-up approach. In the opposite direction, institutions underlie the downward causality described by OIE. This bi-directional dynamism is represented by the circular arrow around the framework, conveying its holistic, synchronic and diachronic nature. The analogy of sedimentation (Clegg, 1989; Cooper *et al.*, 1996; Hyndman *et al.*, 2012; Malhotra and Hinings, 2005) noted earlier is particularly appropriate in the diachronic sense, as ‘layers’ of existing institutional practices combine with new emerging practices and routines over time to bring about change in a cumulative emergent fashion. Finally, the inward-facing arrows around the framework reflect that all elements can potentially change based on contextual factors and external forces - such as

technological change, economic shocks, legislation, external consultants, new entrants into the organization and so forth.

### **Framework clarifications and consequences**

The framework starts with the assumption that rules have been accepted by organization members, but we do not examine how this acceptance of rules occurs. Also, we do not elaborate whether cognitive rules are derived from formal or informal rules (Hodgson, 2006), or whether they have a constitutive or regulative nature (Searle, 2005), as such notions do not detract from the fact that cognitive rules have been accepted by organisational members.

Second, we are not suggesting that the depicted process will necessarily unfold. For example, as already mentioned, a repeated practice may not become a routine, or it may not be possible to embed accepted rules into technological devices. Frequently, the generic rules available in technologies such as ERP systems software may not match organizational requirements and customization may not be appropriate.

Third, we depict institutionalized practices as being underpinned by action and psychological realms, but not the material realm. Although research highlighted the importance of material conditions (e.g., software) and technologically embedded rules in management accounting practices (e.g., Dechow *et al*, 2007), they are not an essential component of routines *per se* and, inherently, of institutionalized practices – hence the dotted lines in the framework<sup>IX</sup>.

Finally, we acknowledge we are not addressing the long standing debate between agency and structure (see for example Hodgson, 1989). Our framework focuses specifically on the interaction between two structures (rules and routines), in which action plays a central role. Specifically, action mediates rules and routines, as enactment of cognitively accepted and/or technologically embedded rules and as a required precursor of routines.

Having acknowledged our limited engagement with the structure/agency, stability/change debate, the previous discussion addressed two ways in which change can occur. First, rules (as cognitive structures and as technologically embedded rules) seem to be easier to influence in a direct, purposeful manner, when compared to routines. As stated, routines tend to emerge gradually, becoming sedimented based on repetition and increased acceptance (ostensive routines as ‘empirically strengthened rules’), often beyond direct



managerial influence. Second, rules indexicality (see above) opens up a way to rules reinterpretation and adaptation as they are drawn upon and enacted by actors in their daily lives. This promotes the possibility of actor-driven change in the very structure we started with - the rule as accepted and interpreted by organizational members - as it encounters the 'real life' context in which it is applied.

## **5. Deploying the framework in the two cases**

We now apply the proposed framework to some management accounting and control examples from our cases. As already clarified, this *ex-post* application: 1) illustrates the kind of empirical situations underpinning the development of our framework; 2) highlights how the understanding of rules and routines interactions, and in turn the understanding of change, is improved by the framework, in the particular area of management accounting and control.

### **An example from RuleCo**

At RuleCo, among the many changes in practices triggered by the large-scale change project, three will be mentioned here: 1) obtaining approval, by the manager with appropriate formal authority, before ordering new fixed assets; 2) having a Bill of Materials (BOM) / cost information defined before producing any given product; and 3) ensuring that acceptance of a new order from a customer does not cause its credit limit to be exceeded. Note that this description of practices could be reworded as description of rules to be enacted.

Rules 1 and 3 – arguably, basic financial controls – were formally defined at RuleCo before this change process, but central actors expressed concern about local actors not enacting them in a consistent way. Failure to accept and enact such rules (in other words, the absence of the prescribed practices) created *de facto* situations in which responsibilities towards suppliers and credit risk exposure were created beyond the formally sanctioned mechanisms and levels. This 'problem' (from a central actors' perspective) was not related with routines, but with the lack of acceptance and enactment of rules by local actors. Rule 2 emerged and became necessary after the implementation of SAP's product costing module. Until then, product BOMs were not fully specified due to lack of need for operational purposes, and costing was based on information and on a

system other than the ones used for operations. However, fully defined BOMs were essential for product costing in SAP.

As detailed in Oliveira (2010), embedding controls in business processes generated benefits and incentives to local actors from complying, and disincentives from not complying, with the proposed rules. For example, if the Shared Service Centre detected, during the administrative steps it carried out preceding an invoice payment, that prior authorization to purchase had not been obtained (rule 1), then the SSC could ultimately not pay the supplier, thus endangering the flow of local operations and compromising local actors' performance. If local actors attempted to produce items without having the BOMs defined (rule 2), entering *post-facto* that production lot into SAP would be complex and highly visible, attracting negative attention upon the noncomplying actors. It should be highlighted that resistance was not totally absent, with some local actors expressing dissatisfaction regarding rules whose enactment was more likely to trigger resistance because conflicting with their local-level interests. For example, some local actors argued that enacting rule 1 could cause delays in purchase processes. However, overall, not only there was an increasing emergence of a fundamental belief that the existence of central control devices was natural in a large company like RuleCo, but also embedding control within everyday business processes reduced the perception of control – as well as the possibilities of circumventing it. These factors promoted an increased disposition among local actors to accept centrally defined rules such as the ones described, integrating them as internal structures at their cognitive level, to be drawn upon in everyday practices. The rules already existed at a formal level, but they were only effective to attain the interests of central actors if / when they were accepted and enacted by local actors (Hodgson, 2006). Moreover, because rule 3 was technologically embedded in SAP, in the material realm, upon each incoming order this non-human actor automatically enacted this rule - making the credit check and allowing the order or not.

Deploying our framework, we can say that rules which became established at the psychological and material realms supported the practices envisaged by the central actors within management accounting (rule 2) and management control (rules 1 and 3). These practices were being consistently repeated in time and space (across the multiple locations of RuleCo). Due to the difficulties of empirically evaluating routinization (see Section Two), Oliveira (2010) did not claim that routinization had already occurred; however, even if not, the emergence of performative and ostensive routines was certainly

underway. The conditions promoting the repetition of practices in time and space had been structurally set at a psychological and at a technological level. Since the new practices had their origin in rules, the RuleCo case illustrates ways in which rules may precede routines, mediated through practices repeated in time and space.

### **An example from RoutineCo**

RoutineCo adopted a new planning and production system including sales and product costing modules. In the previous system, managers and management accountants had limited and high-level cost information available. But even after the new system and detailed costs became available, changes in cost reporting neither happened immediately, nor were they explicitly sought at the start. However, managers gradually came to consider that more frequent and detailed cost reporting would improve control and this was desirable<sup>X</sup>. The emergent rule at stake was “we must produce detailed cost reports”, a cognitive structure which actors may interpret as, for example, what is “a good report” (it should be detailed), “good reporting” (it should be frequent and detailed) or “useful” (provide decision relevant information). This constitutes the psychological realm. According to the orientation for action provided by this psychological dimension (the accepted rule of the need to produce cost reports with the above characteristics), managers went on to shape the information system to embed this rule in it (through software parameterization or customization), or at least select from the material rules pre-programmed within the software. Managers and management accountants met, agreed on a detailed template of cost classifications and adjusted the software as needed - this included using a custom report writing tool called Crystal Reports. At this stage, conditions at the psychological and material realms were set, which both enabled and constrained possibilities of action. Within this structural context of accepted and encoded rules, the management accounting practice of producing the cost report took place. Through rules enactment, the first report was issued when the system went live, and subsequently occurred on a monthly basis. As we already argued, when a practice is first performed, it is premature to suggest that a routine is already in place (cf. van der Steen, 2011). Only after the report was repeatedly produced (the intermediate concept at the framework core, in the action realm) each month according to the accepted and encoded rules, did this practice eventually achieve a routine status.

The above example illustrates the unpacking of rules and routines in our framework. If we explore this example without our understanding of rule and routine interactions, our

interpretation is incomplete. We cannot say that managers at RoutineCo discussing how to produce a cost report constitutes a routine, as such behaviours do not satisfy the definition of routines as set out Pentland (2011). Yet, an agreed understanding of how to create a useful cost report emerged, and this we term a cognitive structure, a rule not documented or formalized at this stage yet. Thus, in comparison to our previous knowledge, we can now trace the emergence of a routine from a shared cognitive structure within the team, which also became materialized through encoding in the report writing software. Together, the psychological and material realms shaped practices which became repeated in time and space, and ultimately became routinized. In contrast to Quinn (2011), who states that (formal and written) rules need not always exist<sup>XI</sup>, we can now explain how the routines noted by him came about through rules (as cognitive structures and through their encoding in technology) and practices, rather than simply accept that routines (as repeated organizational practices) are prevalent in an organization.

Adopting our broader definition of rules, the examples from RuleCo and RoutineCo, highlight the notion that routines are underpinned by rules. The examples also portray the difficulties in claiming a practice is routinized; however, in both cases practices had been repeated and we can at least state that the emergence of performative and ostensive routines was underway. Over time, these practices may gain inertia, automaticity and become sedimented (see Section Two). Without the framework in Figure 1, we could not see the ‘full picture’ as conveyed in these examples. The advantage of now having a ‘fuller’ picture is that we can at least reconcile our cases in rule and routine terms, despite what appeared to be different approaches to change.

## **6. Final comments**

Our framework offers several potential contributions to the furtherance of OIE-based research in management accounting drawing on rules *and* routines. Recent literature has tended to concentrate less on, or even neglect, rules, but here we have shown that both rules and routines are relevant to our understanding of management accounting change. We adopted a wider conception of rules, going beyond formal rules. This wider conception also includes rules as internal cognitive structures orienting action, and the material realm of technologically embedded rules, to account for the pervading influence of technology on the practices of contemporary organisations.

We have argued that rules are an essential component in the formation of routines and both our cases suggest that rules underpin routines and should remain a focus of management accounting research. To this end, we encourage further research into how management accounting rules become accepted in organizations. Fruitful lines of research may include exploring how the material realm may also affect rules acceptance (and not only rules enactment) and introducing intra-organisational diversity, as in Oliveira and Nixon (2014). In contrast, research where no apparent technological material realm exists may prove fruitful. In our cases, technology played a key role in the acceptance of rules and the ultimate emergence of routines. More research may provide other factors which influence the action and psychological realms. We also encourage further empirical research on the distinction between repeated practices and routines, and on the factors which may sediment repeated practices into becoming routines. Finally, we also encourage empirical research on how processes we described may *not* unfold, become interrupted or divert from their original direction, problematizing the reinforcing cycle underpinning our synthetic framework and thus bringing a more realistic view of organizations.

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<sup>I</sup> Hodgson (2006, p. 7) used the expression “reconstitutive downward causation” but recently revised his terminology and replaced “causation” by “effects” to avoid a misleading suggestion of a deterministic mechanism (Hodgson, 2012).

<sup>II</sup> Other theoretical approaches with affinities to institutional theory have made and addressed similar calls. Examples include structuration theory, institutional logics, practice theory (e.g., Giddens, 1984, Englund *et al.*, 2011; Thornton and Ocasio, 2008; Ahrens and Chapman, 2006) and Actor-Network Theory (ANT), with its focus on micro-level relations (e.g., Callon, 1986). Such approaches are beyond the scope of this paper, which, while drawing on ANT’s concept of non-human actors, remains focused on institutional theory and, in particular, on rules and routines.

<sup>III</sup> Hodgson (2008, p. 19) argues that “routines are not behaviour; they are stored capacities or capabilities”, suggesting routines are separate from action - see also Burns’ (2009) view of routines as dispositions. Hodgson does, however, state that “routines depend upon a structured group of individuals, each with habits of a particular kind” (Hodgson, 2008, p. 22).

<sup>IV</sup> “[M]uch of what really matters (note: not necessarily much of what happens) in organizations has to do with exceptions (...), rather than routines, and these exceptions require intentional deliberation and rationality” (Felin and Foss, 2009, p. 164). This argument is not central to this paper, but it suggests that an excessive focus on routines may ignore key drivers of organizational life. Furthermore, as Felin and Foss (2009) point out, responses to exceptions may over time become part of organizational routines.

<sup>V</sup> Felin and Foss (2011) argued that repetition and experience are not a convincing explanatory, ultimate source of routines. Instead, they argued that repetition and experience are merely epiphenomena of thoughts and deliberations, which are more ultimate causes of behavior and hence deserve the main focus. However, Pentland (2011) cited empirical research to strongly disagree. We are not engaging in this debate, but our arguments approach us to Felin and Foss (2011) here.

<sup>VI</sup> Were formal rules to be depicted in the framework, they might be included in a wider conceptualization of the material realm, alongside technologically embedded rules, or in an additional material realm accounting exclusively for them. Since these plausible alternatives would introduce additional complexity and could risk the framework to lose some focus, we preferred to only explicitly relate the material realm with technology (one of the innovative perspectives of the framework) and omit formal rules.

<sup>VII</sup> The introduction and acceptance of rules in a particular social context (e.g. an organization) is itself a worthy research topic (see Oliveira, 2010 and Oliveira and Nixon, 2014), but beyond the scope this paper.

<sup>VIII</sup> Technology is not infinitely flexible to accommodate whatever rules human actors may wish (Volkoff *et al.*, 2007). However, we argue that parameterization capacities of contemporary software such as ERPs provide significant flexibility to embed most rules envisaged by organizational actors, through the selection amongst the multiple alternatives offered by the software.

<sup>IX</sup> It could be argued that all connection lines are tentative and thus should be represented by dotted lines. However, the relationships between rules and routines, and between ostensive and performative routines, have been well previously documented, and are therefore represented by solid lines.

<sup>X</sup> We acknowledge that this unitary view of organizations, endorsing the managerial perspective, overlooks diversity within organizations. The crude simplification of a unitary view, common to other frameworks such as B&S, merely intends to focus the discussion on the concepts and relations between rules and routines. See Oliveira and Nixon (2014) for a related approach explicitly accounting for intra-organizational diversity.

<sup>XI</sup> We are not stating Quinn (2011) was incorrect in his analysis. However, the restricted definition of rules he used lead him to draw on the ostensive routine as a guiding structure to ‘replace’ formal rules, which were inexistent in the empirical setting he researched at RoutineCo.